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EXAMINER

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1793

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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DETAILED ACTION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-5, 10-12, 14-19, 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP '755, and further in view of Turk et al (4,001,379).

EP '755 discloses precipitated silica granules (note abstract).

Product C(13) has N₂-surface area (i.e. BET surface area) of 188 m²/g; DBP absorption of 216 g/100g; CTAB surface area of 170 m²/g (note Table 3, Run 13) and maximum Choline chloride absorption of 205g/100g (note Table 9, Product A (6)). The DBP/choline chloride absorption is (216/205 =) 1.05.

In EP '755, the procedure for testing the maximum choline chloride absorption comprises the steps of adding 75% choline chloride solution dropwise to 10 g of the precipitated silica to be tested in a glass beaker. The mixture is stirred with a spatula. The mixture is watched constantly to check when the maximum absorption has been reached. The maximum choline chloride absorption is reached when no more unloaded particles are to be found in the mixture and said mixture is not yet waxy or smeary. The maximum choline chloride absorption in g/100g = [(a-10)x100] /10 where a = total weight (note page 18, line 20 to line 19, line 1). This maximum choline chloride

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absorption as disclosed in EP '755 is considered the same as the required "choline chloride absorption" since the procedure for measuring the values are the same in EP '755 as in the instant claimed invention.

EP '755 teaches that precipitated silica is known to be used as reinforcing filler for elastomers (note paragraph [0003]) and as a carrier for choline chloride solution (note paragraph [0004]).

For the Sears number, since the product of EP '755 has all the same properties and being made by the same process (note the reasons stated below), the Sears number for the product of EP '755 would inherently be the same as that of the claimed product.

For the process claims, EP '755 discloses a process for producing precipitated silica by preparing a sodium silicate solution in a container, simultaneously adding sodium silicate and sulfuric acid to the container while maintaining a constant alkali index of 7, stopping the addition of sodium silicate, further adding sulfuric acid until the pH of the precipitation suspension has reached 3.0, and the precipitated silica is separated by means of a filter press and eventually spray dried (note Example 3).

The precipitated silica as disclosed in EP '755 is contacted with choline chloride solution (note Table 9).

For other values other than those disclosed in the Examples, EP '755 further discloses the broad ranges such as for product C, the N₂-surface area (i.e. BET surface area) can be from 180-190 m²/g; DBP absorption can be from 220-320 g/100g; CTAB

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surface area can be 168-171 m²/g (note page 6, lines 20-22). These ranges overlap the claimed ranges.

With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

For the limitation "over a period of 40 to 65 minutes" for the step of simultaneously metering aqueous silicate solution and an acid, EP '755 only exemplifies a period of 90 minutes in Example 3, however, the teaching of EP '755 should not be limited to just the example. For the solids content, EP '755 discloses a concentration of 72 g/l after the addition of only sulfuric acid for 30 minutes (after the "acidifying" step), thus, the solid content before the acidifying step should be higher than 72 g/l. Again, the teaching of EP '755 should not be limited to just the value of 72 g/l as specified in the example.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the process conditions, such as duration of the

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"precipitation" step, the solid content after the precipitation step, the alkali number, the pH, etc. in EP '755 in order to produce the desired precipitated silica with the properties as listed above.

For the Sears number, since the product in EP '755 is produced by the same process, i.e. constant alkali process, and has values for all other properties that at least overlap the claimed ranges, the range for Sears number for the product of EP '755 would also overlap the claimed range. Applicants have not provided any evidence to show that the process of EP '755 could not produce a product with the required Sears number. In the event that the Sears number is dependent on the alkali number, Turk '370 is applied as stated below.

The differences are EP '755 does not disclose an alkali number of at least 15 and the step of adding of an electrolyte prior to or during the simultaneously adding of sodium silicate and sulfuric acid.

Turk '370 discloses a process for producing silica (i.e., silicic acid) by adding an alkali metal silicate and an acid to an aqueous alkali metal silicate solution while maintaining the alkali number of the reaction mixture substantially constant at a value within the range of 10-40 (note claim 1). Turk '370 also teaches that the precipitation may be effected in the presence of neutral salts (note column 4, lines 53-54). This neutral salt is considered the same as the claimed "electrolyte".

Turk '370 can be further apply to teach that preferably the participants in the reaction are selected so as to obtain an silica end concentration above 65 g silica/l and preferably between 80 and 100 g silica/l (note column 4, lines 3-6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to further add a neutral salt (electrolyte) and to optimize the alkali number between 10-40, as suggested by Turk '370, for the process of EP '755 because such conditions are known and desirable in an analogous process for producing precipitated silica. Thus, when an alkali number of higher than 15 is used in the process of EP '755, as suggested by Turk '370, the process of EP '755 would produce precipitated silica with high Sears number as required in the instant claims.

Applicant's arguments and declaration filed June 2, 2008 have been fully considered but they are not persuasive.

Applicants argue that the increase of the Sears number by at least 10% compared to EP '755 is significant because it is necessary to achieve affinity between the silica and hydrophilic liquids and without such affinity the desired DBP/CC ratio of below 1.07 cannot be reached, referring to item 13 in the attached Rule 132 Declaration (filed June 2, 2008).

This argument is not persuasive, because as evidence by EP '755, silica product with a DBP/CC ratio of 1.05, which is below the required value of 1.07, and still have low Sears value (as calculated by Applicants to be 22.6 mg/5g).

Applicants argue that the difference of at least 10% between the Sears number and the Sears number of EP '755 is not obvious because it is very difficult to increase the Sears number and at the same time keep all the other parameter as claimed in the ranges as claimed.

The argument is noted, however, there is no evidence or factual data provided to support such argument.

Applicants argue that there is no linear relationship between all parameters and if one parameter is changed, it cannot predict how the other parameters will change.

Again, there is evidence or factual data provided to support this argument. It is, however, disclosed in Applicants' specification that the Sears number is determined by the alkali number (note page 2, lines 20-23). For other properties of the claimed product, such as surface areas, DBP absorption, etc., these properties may be controlled by other process conditions, such as by reaction temperature, reactant concentrations, reaction time, etc., not just by the alkali number. Thus, it would have been well within the skilled of the artisan to produce silica with the desired properties by optimizing the process conditions.

Applicants argue that Turk teaches that increasing the alkaline number would lead to an increase of the DBP.

Granted that Turk does teach that the DBP number of silicic acids that have subjected to a shearing action passes through a flat maximum at an alkali number of 30 going through the range from zero to 40 (note column 16, lines 9-15), however Turk '379 also discloses that other conditions can also affect the DBP number, such as timing and duration of shear action (note Exs. 1-6, especially column 10, line 50 to column 11, line 34) or circulation frequency and shear gradient (note Exs. 9-17, especially column 13, lines 28-51). Thus, Turk '379 teaches the increase of DBP number is small, note "flat maximum", when increasing the constant alkali number and such increase may be

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adjusted by changing other conditions in the process, such as circulation frequency and shear gradient. Again, for the combined teaching of EP '755 and Turk '379, the product is desired to have high DBP values (note the range of 220-320 mg/l for product C in EP '755, page 4) and also high choline chloride adsorption because the product of EP '755 is desired to be used for adsorption of choline chloride, thus, it would have been obvious to one skilled in the art at the time the invention was made to optimize the constant alkaline number in the process EP '755, within the range of 10 to 40 as suggested by Turk '379, along with other process conditions in order to obtain a DBP values within the desired DBP range while maximize the choline chloride adsorption as desired by EP '755. Applicants have not provided any clear evidence to show the criticality for the ranges "over a period of 40 to 65 minutes", "having a solid content of the suspension of from 79.3 to 104 g/l" and "a constant alkali number in the mixture of at least 15".

Applicants argue that neither EP '755 nor Turk teaches how to increase the Sears number above 25 ml/5g while simultaneously keeping the DBP/CC ratio below 1.07.

The process of the combined teaching of EP '755 and Turk has substantially all the positive process steps, thus, such process would inherently produce a product having the properties, including Sears number and DBP/CC ratio, similar or overlapping the properties of the claimed product. Furthermore, EP '755 teaches that the silica product is used for the adsorption of choline chloride (note paragraph [0007]), thus, it would have been obvious to one skilled in the art to optimize the process conditions in

EP '755 in order to maximize the choline chloride adsorption for the product, thereby minimize the DBP/CC ratio as required in Applicants' claims.

Applicants argue that only a minimal increase of the DBP (due to the increase in the constant alkali number) would cause the ratio DBP/CC of example C13 of EP '755 to increase to 1.073 which would be out of the claimed range.

For the combined teaching of EP '755 and Turk '379, the use of a different (i.e. higher) the constant alkali number might cause not only the change in the DBP number but also the CC number so the DBP/CC value might be out of the claimed range as argued by Applicants. Moreover, even if the DBP/CC of example C13 of EP '755 was 1.073 as alleged by Applicants, such value would have suggested to one of ordinary skill in the art a slightly lesser value, such as 1.07, based upon a reasonable expectation of success, *In re O'Farrell*, 853 F. 2d 894, 907, 7 USPQ 2d 1673, 1681 (Fed. Cir. 1988).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on a Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Ngoc-Yen M. Nguyen/
Primary Examiner, Art Unit 1793

nmn
September 19, 2008